abcam

ab155096

Anti-PDHA1 antibody [EPR11099]

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR11099
Purification technique	Affinity purification Protein A
Concentration	0.478 - 0.499 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/50 - 1/100
Notes	-

Predicted

Species	Mouse, Rat
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/1000 - 1/2000
Notes	-

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/250 - 1/500
Notes	-

Predicted

Species	Mouse, Rat
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/1000 - 1/10000
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Predicted

Species	Mouse, Rat
Dilution info	-
Notes	-

Target data

See full target information PDHA1

Function	Together with PDHB forms the heterotetrameric E1 subunit of the pyruvate dehydrogenase (PDH) complex (PubMed:17474719, PubMed:19081061). The PDH complex catalyzes the overall conversion of pyruvate to acetyl-CoA and CO(2), and thereby links cytoplasmic glycolysis and the mitochondrial tricarboxylic acid (TCA) cycle (PubMed:19081061, PubMed:7782287). It contains multiple copies of three enzymatic components: pyruvate dehydrogenase (E1), dihydrolipoamide acetyltransferase (E2) and dihydrolipoamide dehydrogenase (E3) (Probable). The E1 subunit catalyzes both the thiamine pyrophosphate (TPP)-dependent decarboxylation of pyruvate and the reductive acetylation of a lipoyl group covalently linked to the lipoyl-bearing domains of E2 (PubMed:17474719, PubMed:19081061, PubMed:7782287).

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C

Notes

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	PDHA1 also known as the pyruvate dehydrogenase E1 alpha subunit plays a mechanical role in cellular metabolism. It forms part of the larger pyruvate dehydrogenase (PDH) complex where it serves as a critical catalytic component. PDHA1 is expressed ubiquitously across different tissue types reflecting its fundamental function in energy production. The molecular weight of the PDHA1 protein is approximately 43 kDa. Alternate names for this protein include the PDH E1 component and it partners closely with other components in the PDH complex to facilitate its role.
Biological function summary	PDHA1 engages in the conversion of pyruvate into acetyl-CoA an important step in cellular respiration. This protein is part of the PDH complex which consists of multiple copies of three catalytic and two regulatory subunits. The conversion process is essential for linking glycolysis to the citric acid cycle efficiently channeling energy substrates within the cell. Furthermore the functional activity of PDHA1 is regulated through phosphorylation by the pyruvate dehydrogenase kinases (PDKs) and dephosphorylation by PDH phosphatases.
Pathways	PDHA1 is integral to the metabolic pathway of cellular respiration and energy production. It enables the transition between glycolysis and the citric acid cycle by facilitating the conversion of pyruvate to acetyl-CoA which enters the citric acid cycle. Related proteins in this pathway include PDHA2 and the regulatory PDKs that modulate PDHA1 activity. These interactions ensure energy metabolism adapts to various cellular conditions influencing energy balance and substrate utilization.
Associated diseases and disorders	Mutations or dysfunctions in PDHA1 can lead to disorders such as pyruvate dehydrogenase deficiency and Leigh syndrome. These conditions result from impaired energy metabolism leading to severe neurological symptoms and overall energy deficits in tissues with high metabolic demands. The link between PDHA1 and diseases highlights the importance of maintaining its function. Additionally altered interaction with proteins involved in phosphorylation such as the PDKs can exacerbate pathogenic conditions by further disbalancing metabolic activities.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

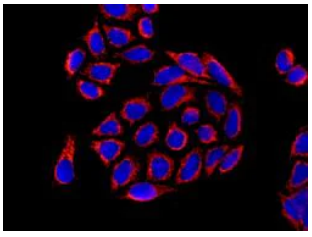
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

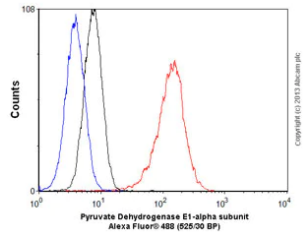
5 product images



Immunocytochemistry/ Immunofluorescence - Anti-PDHA1 antibody [EPR11099] (ab155096)

PDHA1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-PDHA1 antibody

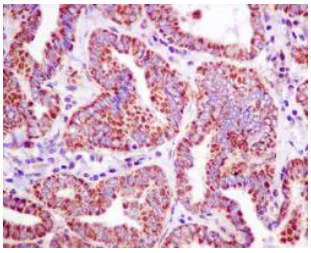
Immunofluorescent analysis of HeLa cells labeling PDHA1 with ab155096 at 1/250 dilution.



Flow Cytometry (Intracellular) - Anti-PDHA1 antibody [EPR11099] (ab155096)

PDHA1 Flow Cytometry (Intracellular) staining using rabbit Anti-PDHA1 antibody

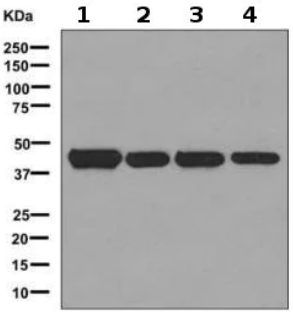
Overlay histogram showing HeLa cells stained with ab155096 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab155096, 1/10000 dilution) for 30 min at 22°C. The secondary antibody used was Alexa Fluor® 488 goat anti-rabbit IgG (H&L) (ab150077) at 1/2000 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit IgG (monoclonal) (0.1µg/1x10^6 cells) used under the same conditions. Unlabelled sample (blue line) was also used as a control. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-PDHA1 antibody [EPR11099] (ab155096)

PDHA1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-PDHA1 antibody

Immunohistochemical analysis of paraffin-embedded Human thyroid carcinoma tissue labeling PDHA1 with ab155096 at 1/50 dilution.
Perform heat mediated antigen retrieval before commencing with IHC staining protocol.



Western blot - Anti-PDHA1 antibody [EPR11099] (ab155096)

All lanes:
Western blot - Anti-PDHA1 antibody [EPR11099] (ab155096) at 1/1000 dilution

Lane 1:
HepG2 cell lysate at 10 µg

Lane 2:
293T cell lysate at 10 µg

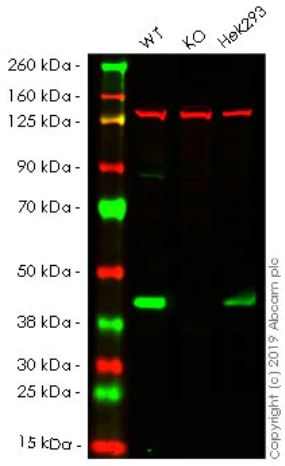
Lane 3:
HeLa cell lysate at 10 µg

Lane 4:
Jurkat cell lysate at 10 µg

Secondary

All lanes:
Goat anti-rabbit HRP conjugated at 1/2000 dilution

Predicted band size: 43 kDa



Western blot - Anti-PDHA1 antibody [EPR11099] (ab155096)

Lanes 1 - 3: Merged signal (red and green). Green - ab155096 observed at 43 kDa. Red - loading control, ab130007, observed at 130 kDa.
ab155096 was shown to recognize PDHA1 in wild-type HeLa cells as signal was lost at the expected MW in PDHA1 knockout cells. Additional cross-reactive bands were observed in the wild-type and knockout cells. Wild-type and PDHA1 knockout samples were subjected to SDS-PAGE. The membrane was blocked with 3% Milk. ab155096 and ab130007 (Mouse anti Vinculin loading control) were incubated overnight at 4°C at 1/1000 dilution and 1/20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed ab216773 and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed ab216776 secondary antibodies at 1/20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-PDHA1 antibody [EPR11099] (ab155096) at 1/1000 dilution

Lane 1:
Wild-type HeLa whole cell lysate at 20 µg

Lane 2:
PDHA1 knockout HeLa whole cell lysate at 20 µg

Lane 3:

HEK-293 whole cell lysate at 20 µg

Predicted band size: 43 kDa

Observed band size: 43 kDa

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.